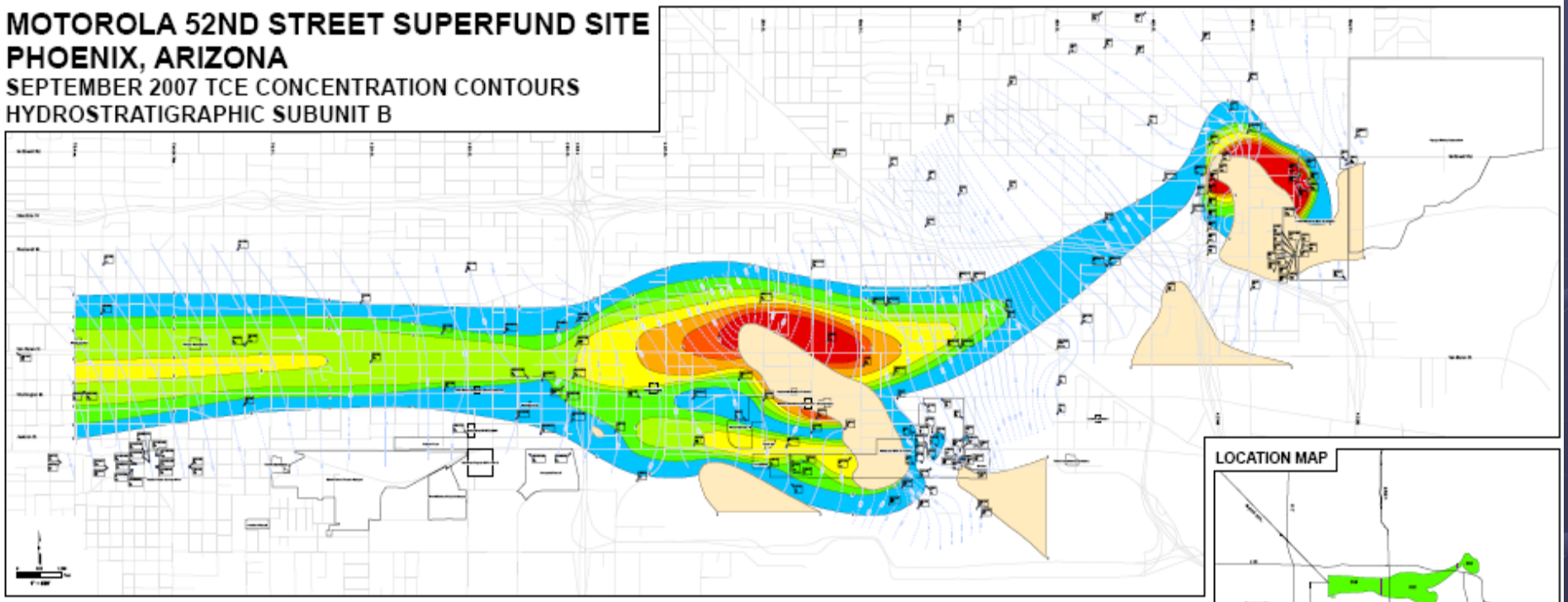
Investigation of VI at the Kachina Joray Facility within Motorola 52nd St Superfund Site

Background and

Summary of Results

CIG – June 2011

MOTOROLA 52ND STREET SUPERFUND SITE
PHOENIX, ARIZONA
SEPTEMBER 2007 TCE CONCENTRATION CONTOURS
HYDROSTRATIGRAPHIC SUBUNIT B



LOCATION MAP

LEGEND

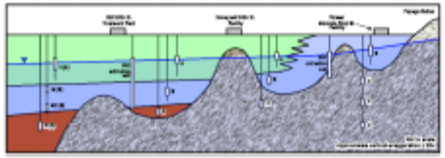
GROUNDWATER WELLS

OTHER FEATURES

TCE CONCENTRATIONS

EXAMPLE CROSS-SECTION

HYDROGEOLOGIC CROSS-SECTION SCHEMATIC



EXPLANATION OF HYDROSTRATIGRAPHIC UNITS (HSUs)

A - Salt River Gravel Deposits. Rounded gravel, cobbles, and boulders in a sandy matrix with minor silt and clay.

B - Upper Basin Fill Deposits. Interbedded fine and coarse grained unconsolidated sediments.
- Fine grained beds are typically sandy silt with clay.
- Coarse grained beds are sand with rounded pebbles, gravel, cobbles, and lesser amounts of silt and clay.

C - Lower Basin Fill Deposits. Predominantly fine grained unconsolidated sediments with coarse grained interbeds
- Fine grained beds are typically sandy silt with clay.
- Coarse grained beds are sand with rounded pebbles and gravel, with lesser amounts of cobbles, silt, and clay.

C - Bedrock. Fractured, tilted, and faulted mid-Tertiary sedimentary and volcanic rocks and pre-Cambrian metamorphic and igneous rocks.

NOTES

LFR

ADEQ

Very High PCE in Soil Gas

- Highest concentration of soil gas for PCE
  - 17 million µg/m^3
  - 25 feet beneath ground surface
  - PCE Soil gas screening level is 180 µg/m^3
- 9.4 million µg/m^3 PCE found 10 feet beneath concrete floor at facility
- 35,000 µg/m^3 at fenceline near residences

Facility & Residences

2 Locations of Potential Concern re: Vapor Intrusion:

KJ facility itself

Homes & businesses next to facility

Summary Results - Off Property

PCE (µg/m3)	Sub-Slab	Indoor	Ambient
Res 1	ND	0.25	0.32
Res 2	ND	0.53	
Res 3	ND	0.25	
Res 4	36	0.30	
Res 5	50	0.34/ND	
Res 6	96	0.25	
Biz 1	1300	--	
Biz 2	190	--	

Only PCE detected; no TCE or breakdown products detected.

Summary Results - Off Property

- Soil vapor contamination has moved off Kachina Joray property - detected in some sub-slab samples (mainly PCE)
- No evidence of vapor intrusion into homes
  - Indoor air essentially same as ambient and/or no sub-slab PCE detected
- Some VI likely at commercial buildings but predicted IA levels indicate minimal risk
  - Sub-slab only, no IA sampling b/c of chemicals, materials used by businesses

Summary Results - Facility

	PCE (µg/m3)	TCE (µg/m3)	Ambient
Office FW	12	ND	0.40 (PCE) ND (TCE)
Office FC	42	ND	
Office FE	69 / 72	0.47 / 0.49	
Chem Room	40	ND	
Usonic 1	120	3.0	
Usonic 2	150	3.1	
General	27	ND	

Only PCE & TCE detected; no breakdown products detected.

Summary Results - Facility

- Vapor intrusion is occurring in the building
  - mostly PCE; some TCE also.
- Indoor air PCE levels significantly elevated
  - Risks for workers range $5x10^{-6}$ to $7x10^{-5}$
    - 5 to 70 in one million (25 year career)
- EPA typically requires mitigation of IA at these levels for industrial facilities

Next Steps in Mitigating Vapor Intrusion at the Kachina Joray Facility

- Currently working cooperatively with State and PRPs to move forward with mitigation
  - Accelerating CERCLA remedial process
- Building construction presents challenges in mitigation
  - EPA experience suggests sub slab depressurization system or ventilation improvements not likely to work

Installation of Soil Vapor Extraction Wells (SVE) is EPA's Preferred Approach

- Concentrations underneath building at 17 million µg/m^3
- SVE is designed to pull out large volumes of soil gas
- Very similar situation with another industrial facility with vapor intrusion problem
  - SVE was effective in protecting indoor air

- Property to the east needs more investigation